

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE China in Space: Implications for U.S. Military Strategy				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Defense University, Institute for National Strategic Studies, 260 5th Avenue SW Fort Lesley J. McNair, Washington, DC, 20319				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

China in Space

Implications for U.S. Military Strategy



By P. GREGORY METZLER



One who has few must prepare against the enemy.

One who has many makes the enemy prepare against him.

—Sun Tzu¹

China's January 11, 2007, launch of an antisatellite (ASAT) weapon against a low Earth orbit satellite heralded the end of a self-imposed 20-year period in which the United States and Russia had refrained from using destructive weapons in space. In addition to highlighting a growing capacity to limit the use of space by others, China's demonstration has generated demands for the United States to review its space policy and establish agreements to prevent the use of space for military purposes.² Others have called for the opposite: a renewed space race and the deployment of space-based weapons. One thing is clear, however: China's growing space capability has profound implications for U.S. military strategy and, ultimately, national policy.

China in Space

China has made great progress in its space program. Since 1984, it has come from having no geostationary satellites to launching Shenzhou VI for a 5-day orbit of the earth,³ joining the ranks of Russia and the United States as the only nations with a manned space capability.⁴

China's January ASAT test was an ascending orbit shot. As the satellite passed overhead, the Chinese intercepted it. Launching a rocket at a satellite in low Earth orbit

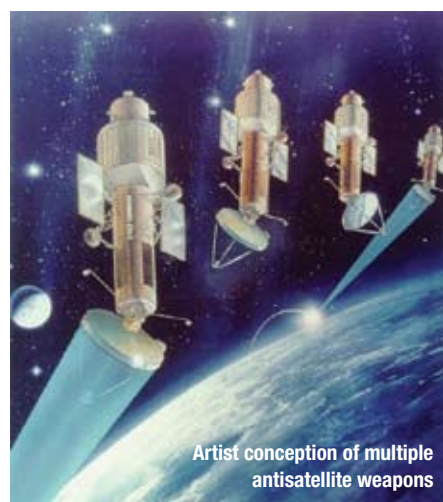
Commander P. Gregory Metzler, USN, wrote this essay while a student at the Industrial College of the Armed Forces. It won the Strategic Article category of the 2007 Chairman of the Joint Chiefs of Staff Strategic Essay Competition.

directly overhead is one thing; hitting a satellite in a high, geostationary orbit in another part of the sky is something else. In short, while China has made great progress, we must be careful to characterize the threat accurately. It *is* real. It *is* growing. But it is *not* all-powerful.

What would motivate China to pour resources into its space program instead of other challenges? China's space program is a source of national pride at a time when the Communist Party's performance is being criticized by a burgeoning Chinese middle class. However, pride is not the only driver. The space program provides a mechanism for research and scientific exploration that will undoubtedly advance China's education and high-tech industrial base much as the Apollo program did in the United States.⁵



Artist rendering of antisatellite weapon in orbit



Artist conception of multiple antisatellite weapons

In addition to economic development, China's space program will likely become a political bargaining chip in negotiations with the West.⁶ Advances in the ASAT program could be used to trade against concessions on other issues of importance to Beijing. Political benefit is not limited to East-West negotiations. In March 2006, seven countries (Bangladesh, Indonesia, Iran,

Mongolia, Pakistan, Peru, and Thailand) were granted access to Chinese weather and Earth resources satellites, including training of ground station operators. Such a move to provide partners in regions of interest is reminiscent of the U.S. approach to sharing its satellite resources with its friends.⁷ In sum, China's space program has graduated from a research and development tool to one of diplomacy.

Implications for the United States

Beijing's entry into the ASAT club has numerous implications for Washington. First, China's successful launch is a not-so-subtle message to the United States and other powers of its capacity for denying space to those who rely on it for commerce, intelligence, and communications. Numerous open sources have illustrated Chinese military thinkers' recognition of American reliance on technology and the need to counter the U.S. space-based infrastructure.⁸ Additionally, China's ability to hit space-based targets speaks to a growing technological sophistication that could be translated to other weapons and serves as an overt demonstration of China's desire to dominate its battlespace.

Then there is the practical matter of China adding to the "space junk" problem. The ASAT test created approximately 2 million pieces of space debris (adding to 140 million already estimated to be in orbit). Given that it is difficult to protect satellites against particles larger than 1 centimeter

an integral component of our doctrine, development, and training.

Next Moves

There are several things the United States should consider undertaking in order to communicate its expectations regarding appropriate international behavior in space.

Clarify U.S. Space Policy. The 2006 Space Policy has received substantial international criticism for its assertion that the United States has the right to "deny, if necessary, adversaries the use of space" and simultaneously "dissuade or deter others" from developing similar capabilities to deny U.S. access.¹⁰ One cannot help but wonder if Beijing's ASAT shot was intended to demonstrate unambiguously that it is impossible for Washington to prevent the development of ASAT technology. The United States should realign its policy with existing agreements and reassert the tenets of "free access" to, and "freedom of passage" in, space . . . enshrined in the 1967 Outer Space Treaty.¹¹

Unfortunately, history repeatedly has demonstrated the disdain with which rogue leaders treat international agreements. As a nation, we must avoid establishing agreements that unreasonably limit our capacity to use space from a defensive perspective. Clearly, the deployment of weapons of mass destruction into space would be fundamentally destabilizing. Likewise, unrestricted testing of destructive antisatellite weapons would only increase the risk of collateral damage to friendly satellites. However,

in addition to economic development, China's space program will likely become a political bargaining chip in negotiations with the West

and to detect particles smaller than 10 centimeters, the use of kinetic weapons in space poses a serious and lasting risk of collateral damage.⁹

Ultimately, however, China's demonstrated ASAT capability should serve as a warning to U.S. Armed Forces who have come to rely on space-based assets in virtually every aspect of their method of warfare. Have we, as a nation, worked through potential responses to either hard or soft kills of our satellites? How would our operations change absent communications or intelligence satellites? Such scenarios must become

the costs and timeline associated with the deployment of defensive space technology in response to a rogue state's weaponization of space should underscore a decision to proactively manage, rather than cede through inaction, the ultimate high ground of space.

Avoid a Space Race. We must avoid a space race. Instead of trying to beat the Chinese to the Moon, as some have implied,¹² we should remain focused on our own space program (both civilian and military) and remind those pressing for our return to the Moon ahead of China that we have already been there—several times. By focusing on



Clockwise from left: Long March missile with Shenzhou 6 mission; Artist rendering of ASAT system; China's concept of its lunar satellite Chang'e 1



as to complicate the military problem for potential adversaries. Defense in-depth, improved survivability, redundancy, and our capacity to destroy an adversary's space infrastructure must be improved. We must recognize that U.S. military superiority in space cannot be assured and adapt our strategy, doctrine, operations, acquisition, and training to reflect that reality. **JFQ**

NOTES

¹ Sun Tzu, *The Art of War*, trans. Samuel B. Griffith (New York: Oxford University Press, 1971).

² Laura Grego and David Wright, "The Bush Administration's National Space Policy," Union of Concerned Scientists, October 13, 2006, available at <www.ucsusa.org/global_security/space_weapons/bush-administration-national-space-policy.html>.

³ Zhao Huanxin, "Nation sets out goals for space exploration," *China Daily*, October 13, 2006, available at <<http://ezproxy6.ndu.edu/login?url=http://proquest.umi.com/pqdweb?did=1144517361&Fmt=3&clientId=3921&RQT=309&VName=PQD>>.

⁴ Michael Westlake, "Space program engenders pride . . . and pause," *Aerospace America*, July 2006, 10.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ Qiao Liang and Wang Xiangsui, *Unrestricted Warfare* (Beijing: PLA Literature and Arts Publishing House, February 1999).

⁹ Wang Ting and David Wright, "Debris from China's Kinetic Energy ASAT Test," Union of Concerned Scientists, February 2, 2007, available at <www.ucsusa.org/global_security/space_weapons/debris-from-chinas-asat-test.html>.

¹⁰ Grego and Wright; and Theresa Hitchens, "The Bush National Space Policy: Contrasts and Contradictions," Center for Defense Information, October 13, 2006, available at <www.cdi.org/program/document.cfm?DocumentID=3692&StartRow=1&ListRows=10>.

¹¹ Hitchens.

¹² Westlake.

¹³ Ibid.

¹⁴ Michael P. Pillsbury, *An Assessment of China's Anti-Satellite and Space Warfare Programs, Policies and Doctrines*, Report to the U.S.-China Economic and Security Review Commission, January 19, 2007, available at <www.uscc.gov/researchpapers/2007/FINAL_REPORT_1-19-2007_REVISIED_BY_MPP.pdf>.

our own space strategy and directing our resources accordingly, we can more efficiently minimize the risk China's capabilities pose to U.S. interests.

Seek Opportunities for Engagement.

China's progress in space is an opportunity for engagement. Just as the United States is putting instruments on a lunar orbiter to be launched by India,¹³ there may be opportunities for cooperation with China in future space missions. Perhaps a U.S.-China Moon mission or international mission to Mars could serve as a vehicle for promoting international cooperation and shaping China's behavior, prompting Beijing to demonstrate the self-restraint of Russia and the United States during the Cold War.

Improve Survivability. However, we must prepare for the possibility that China's intentions are hostile. We must provide our space warfare commanders the same level of situational awareness that is available to our "air breather" warfare commanders to include survivable sensing, targeting, and command and control. We must improve our capacity to replace damaged satellites as well as rapidly deploy defensive systems and decoys. We must develop, build, and train with replacement technology such as meshed unmanned aerial systems or other communications and surveillance aircraft that will

enable U.S. forces to dominate the battlefield even if our satellites are disrupted.

Improve Intelligence Capability. We must sort fact from fiction. Open source writings by Chinese military professionals have called for the covert development and deployment of antisatellite weaponry for use in a surprise attack against U.S. space assets.¹⁴ Our failure to detect the deployment of such weapons could result in catastrophic consequences for the United States. In addition to understanding the capabilities and vulnerabilities of potential adversary space programs, we must also understand their intended use.

China's emergence as a power in space reflects its emergence as an economic power and its desire to advance its international prowess, further its political agenda, and expand its capabilities in science and technology. Washington should engage Beijing as a respected partner in space—not solely for the aim of "containing China," but to reinforce international norms against which all users of space shall be measured, including the United States.

However, we must not ignore China's progress. We must candidly recognize the threat to our ability to conduct operations and address vulnerabilities in such a way